

CLAIMS

1. a composition of matter comprising:
a metal oxide substrate which can be formed into a sol;
5 a water soluble, acid moiety having a hydrocarbyl group with olefinic unsaturation
bound to said metal oxide substrate; and
a water soluble, free radical initiator.
2. The composition of Claim 1 wherein said metal oxide comprises an alumina.
10
3. The composition of Claim 2 wherein said alumina is selected from the group
consisting of boemite alumina, gamma alumina, delta alumina, theta alumina, alpha alumina,
silica-alumina mixed oxides, titania-alumina mixed oxides and mixtures thereof.
- 15 4. The composition of Claim 3 wherein said alumina comprises boemite
alumina.
5. The composition of Claim 1 wherein said acid moiety is selected from the
group consisting of (a) aliphatic carboxylic acids, (b) aromatic carboxylic acids, (c) sulfonic
20 acid derivatives of unsaturated carboxylic acids, (d) sulfinic acid derivatives of unsaturated
carboxylic acids, (e) phosphonic acid derivatives of unsaturated carboxylic acids, (g) sulfate

derivatives of unsaturated carboxyl acids, phosphate derivatives of unsaturated carboxylic acids, (h) salts of (a)-(g) and mixtures thereof.

6. The composition of Claim 1 wherein said free radical initiator is selected from
5 the group consisting of persulfates, organic peroxides, inorganic peroxide, azonitrile compounds and mixtures thereof.

7. A functionalized polymeric composition comprising:
the reaction product of any of the compositions of Claims 1-6 and a polymer that is
10 substantially free of functional groups.

8. A process for making a modified metal oxide comprising:
forming an aqueous sol of said metal oxide;
mixing said aqueous sol of said metal oxide with a water soluble, acid moiety having
15 a hydrocarbyl group with olefinic unsaturation; and
mixing said aqueous sol and said acid moiety with a free radical initiator to form an aqueous medium precursor; and
removing liquid from said aqueous precursor and recovering a dry, modified metal
oxide.

20

9. A process for producing a functionalized polymer comprising:

mixing a composition of matter according to any of Claims 1-6 with a polymer that is substantially free of functional groups under conditions to decompose said free radical initiator.